

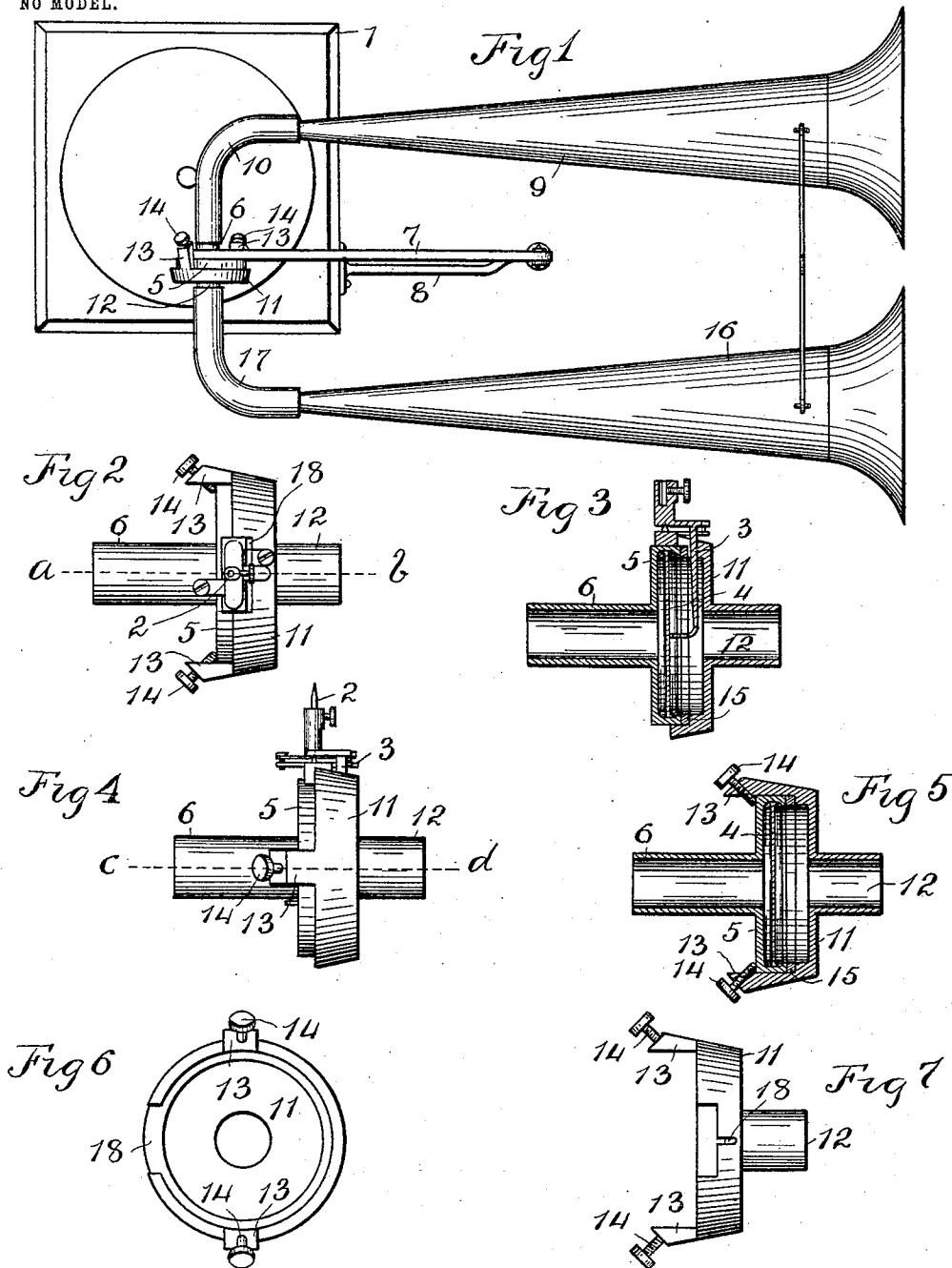
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C. E. HILL.
PHONOGRAPH REPRODUCER ATTACHMENT.

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NO MODEL.



Witnesses:

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PHONOGRAPH REPRODUCER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 773,740, dated November 1, 1904.

Application filed March 20, 1903. Serial No. 148,776. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HILL, a citizen of the United States of America, residing in Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Improvement in Phonograph Reproducer Attachments, of which the following is a specification, reference being had therein to the accompanying drawings, forming a part thereof.

My invention relates to improvements in phonograph-reproducers.

The object of my invention is to provide a reproducing attachment for phonographs in which the sound-waves on both sides of the diaphragm are amplified, thus increasing the volume of the sound heard by an audience listening to the phonograph.

My invention provides, further, a novel attachment that may be applied to phonographs already on the market, such as the "Columbia" graphophone, the attachment serving to gather and amplify the sound-waves made at one side of the reproducer-diaphragm and which are ordinarily dissipated, and thereby lost to the audience.

My invention provides, further, means by which the said attachment may be securely fastened to the ordinary phonograph-reproducer mechanism, the said means providing means also by which rattling or jarring between the reproducer and the attachment may be avoided.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings, illustrative of my invention, Figure 1 is a plan view of a phonograph of the gramophone type, such as the Columbia graphophone, provided with a reproducing attachment constructed in accordance with the principles of my invention. Fig. 2 is an elevation view looking at the side from which extends the reproducing-stylus of my reproducer attachment connected to the reproducer of the Columbia type. Fig. 3 is a longitudinal sectional view taken on the dotted line *a b* of Fig. 2. Fig. 4 is a side elevation view of the parts shown on Fig. 2 viewed from a point at right angles to that from which the view shown in Fig. 2 was taken. Fig. 5 is a

longitudinal central sectional view taken on the dotted line *c d* of Fig. 4. Fig. 6 is an end elevation of the attachment looking toward the open end thereof. Fig. 7 is a side elevation view of the attachment looking toward the side having the recess through which extends the actuating-arm of the reproducer.

Similar characters of reference indicate similar parts.

1 indicates the frame of the phonograph; 2, the stylus; 3, the actuating-arm supporting the stylus and secured at its inner end to the reproducer-diaphragm 4, secured in any desirable manner within the hollow cylindrical diaphragm-supporting member 5 of the phonograph. The member 5 is the diaphragm-support usually employed in the Columbia graphophones. It is provided with an open end and a closed end, the closed end being provided with a rearwardly-extending horizontal tubular extension 6, which serves as an outlet for the sound-waves produced by the diaphragm upon that side of the diaphragm. The member 5 is supported by a horizontal arm 7, provided at one end with a hole in which is fitted the extension 6. The other end of the arm 7 is pivotally supported by a bracket 8, secured to the side of the body 1. An ordinary horn 9 is connected by a flexible non-resonant tube 10 with the outlet or extension 6.

The mechanism just described is that of an ordinary Columbia graphophone, and further description thereof is unnecessary.

The attachment comprises the following: 11 indicates the chambered member forming part of the attachment. This member is circular in form and is provided with a closed and open end similar to member 5. It is also provided with a sound-outlet comprising a central tubular extension 12, disposed axially in line with the outlet 6. The member 11 when attached to the member 5 encircles the outer periphery of the same and is provided at the open end with two rearwardly-extending arms 13, which extend parallel with the axis of the member 5 and to the rear of the closed side of the said member. Each arm 13 is provided with an inwardly and forwardly inclined screw-threaded hole in which is fitted

a thumb-screw 14, adapted to bear upon the rear closed side of the member 5. Between the two members 5 and 11 is a resilient ring 15, forming a cushion to prevent the members rattling against each other. By adjusting the screws 14 the two members 5 and 11 may be drawn together against the pressure of the cushion 15 and securely locked in position. Another amplifying-horn 16 is connected by a flexible non-resonant tube 17 with the outlet extension 12. The horns 16 and 9 may be supported in any desirable manner. In one side of the wall of the member 11 is provided a recess 18, through which the stylus-supporting arm 3 may extend.

In order to attach my attachment to the kind of a phonograph described, it is but necessary to place it with the open end against the open end of the member 5, with the arms 13 extending to the rear of the closed side of the member 5. The screws 14 are then adjusted so as to bear against the rear side of the member 5. By turning the screws 14 properly the member 11 may be forced tightly against the cushion 15. With the horns 9 and 16 in position as described sound-waves made by the diaphragm upon each side thereof are carried by the extension-outlets 6 and 12 through the tubes 10 and 17 into the horns 9 and 16, in which the sound-waves are amplified and the reproduced sounds heard with much more than their ordinary loudness. The tubes 10 and 17 being flexible permit the horns to be moved to any desired position independently of each other and being non-resonant the tubes do not readily conduct to the horns scratching or rattling sounds from the machine.

My invention may be modified in various ways, so as to be capable of application to phonographs of different styles. The member 11 may be manufactured and sold as an article of manufacture which can be readily applied to the reproducing mechanism for which it is adapted to be used.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a phonograph-reproducer, the combination with the reproducer-diaphragm, of a chamber inclosing the same, the said chamber being provided with two outlets for sound, one at each side of the diaphragm, and two separated sound-amplifying horns connected flexibly one with each of said outlets.

2. In a phonograph-reproducer, the combination with two chambered members each provided with an outlet for sound-waves, of means for releasably securing the said two members together, two separated amplifying-horns connected flexibly with the said outlets respectively, and the reproducer-diaphragm disposed in one of said members with opposite sides facing the two outlets respectively.

3. In a phonograph-reproducer, the combi-

nation with one chambered member provided with a sound-outlet, of the reproducer-diaphragm mounted in said chamber and having one side facing said outlet, a second chambered member provided with a sound-outlet disposed adjacent to the opposite side of said diaphragm, a resilient cushion between the two said members, means for securing said members together, and two separated horns connected flexibly respectively with the said outlets.

4. In a phonograph-reproducer, the combination with two chambered members adapted to receive between them the reproducer-diaphragm and provided each with a sound-outlet, the said outlets being disposed respectively one at each side of the diaphragm, of a resilient cushion between the two members, means for adjusting the two members toward each other against the pressure of said cushion, and two separated amplifying-horns connected flexibly respectively one with each of said outlets.

5. In a phonograph-reproducer, the combination with a chambered member provided with a sound-outlet, of a second chambered member provided with a sound-outlet and a plurality of arms adapted to embrace the first member, a plurality of adjusting-screws disposed one in each of said arms and arranged to engage the first member and draw the two members toward each other when the screws are properly turned, a diaphragm disposed between the said outlets, and a resilient cushion disposed between the two members.

6. In a phonograph-reproducer, the combination with the reproducer-diaphragm, of a chamber inclosing said diaphragm and having two outlets for sound, one at each side of the diaphragm, two amplifying-horns movable independently of each other, and two flexible tubes connecting the two horns to the two sound-outlets respectively.

7. In a phonograph-reproducer, the combination with a chambered member provided with a sound-outlet, of a diaphragm disposed opposite said outlet, a second chambered member provided with a sound-outlet disposed opposite the other side of said diaphragm and adapted to be secured to one side of the first member and provided also with two rearwardly-extending arms, two adjusting-screws disposed one in each of said arms and adapted to engage the other side of said first member, a resilient cushion disposed between the two members, and means for amplifying the sound-waves emitted from the two said outlets.

8. In a phonograph-reproducer, the combination with a chambered member having one open and one closed side and having a sound-outlet in the closed side, of a second chambered member also provided with an open side disposed adjacent to the open side of the other member and having a closed side

provided with a sound-outlet, the second member being also provided with two rearwardly-extending arms projecting beyond the rear side of the first member, two forwardly and inwardly inclined screws disposed one in each of said arms and adapted each to bear against the rear closed side of the first member, a reproducer-diaphragm disposed with its sides opposite the two outlets respectively, and means for amplifying the sound-waves emitted from the said outlets.

9. In a phonograph-reproducer, the combination with the reproducer-diaphragm, of a chamber inclosing the same and having two sound-outlets, one at each side of the diaphragm, two sound-amplifying horns, and two flexible tubes connecting the two horns and the two outlets respectively.

10. In a phonograph-reproducer, the combination with two chambered members provided each with a closed and an open side, the open sides of the said members being disposed toward each other and the closed side of each member being provided with a sound-outlet, one of said members encircling the outer periphery of the other member, the outer of said members being provided with a plurality of arms extending past the inner member, a plurality of inwardly and forwardly inclined screws disposed one in each of said arms and bearing against the rear side of the inner member, a resilient cushion between the two members, a diaphragm disposed between the two said outlets, and means for amplifying the sound-waves emitted from said outlets.

11. In a phonograph-reproducer, a repro-

ducing-chamber provided with an open and a closed end, the closed end being provided with a tubular extension open at both ends, and two arms extending from the open side of the chamber parallel with the axis thereof and provided each with screw-threaded holes disposed one in each arm and inclining inwardly toward the axis of the chamber.

12. In a phonograph-reproducer, the combination with two chamber members provided each with a sound-outlet, of a resilient cushion between the two chambers, means for forcing the two chambers toward each other against the pressure of the said cushion, two sound-amplifying horns, and two flexible tubes connecting the two horns with the two outlets respectively.

13. In a phonograph-reproducer, the combination with two chamber members provided each with a sound-outlet, and one of which is provided with a plurality of arms which embrace the other member, a plurality of screws disposed one in each arm and arranged to engage said other member and draw the two members toward each other when the screws are properly turned, a diaphragm disposed between the two members and between the outlets thereof, and two sound-amplifying horns connected respectively to the two said outlets.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. HILL.

Witnesses:

WARREN D. HOUSE,
HENRY F. ROSE.